

FINAL REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-3-R-14

Fisheries Investigations and Surveys of the Waters of Region 3-B

Job No. B-24

Fish Population Control Recommendations

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ABSTRACT

During this job, surveys were made on 6 lakes and portions of 4 rivers in Region 3-B. Included were the following lakes and rivers: Caddo, Lake O' the Pines, Murvaul, Striker, Palestine, and Dam "B" Reservoir and the Sabine, Neches, Trinity, and Angelina Rivers.

The criteria for consideration of population control would be a rough fish population exceeding 80 per cent by weight or number of the total fish collections for given waters.

Of the 6 lakes surveyed, only Lake Striker met these criteria. Lake Striker had 80.07 per cent of rough fish by weight. Carp and gizzard shad made up 58.39 per cent of the total weight. It is recommended that selective netting of carp and gizzard shad be made on Lake Striker.

The Sabine, Neches, and Angelina Rivers meet the criteria for rough fish population control, but such management is not recommended. Stream management by chemical control is not economically feasible and control by commercial fishing is not probable because of the low value of the non-commercial rough fish species present.

None of the lakes in Region 3-B, with the exception of Lake Striker, meet the criteria for rough fish population control and rough fish control in area streams is not feasible. It is recommended that this job be terminated.

FINAL REPORT

State of Texas

Project No. F-3-R-14

Name: Region 3-B Fisheries Studies

Job No. B-24

Title: Fish Population Control Recommendations

Period Covered: February 1, 1966 - January 31, 1967

Objectives:

To determine those waters which would benefit from population control in Region 3-B.

1. To study past fish population records for lakes Caddo, Lake O' the Pines, Murvaul, Striker, Palestine and Dam "B" Reservoir and portions of the Sabine, Neches, Trinity and Angelina Rivers.

2. To survey the above lakes and rivers to determine present fish population.

Procedures:

Surveys were made on each of the above lakes and rivers during this segment. These surveys included sampling of fish populations with gill nets, hoop nets, and seines. Standardized gill nets 150 feet in length and 8 feet in depth with mesh size ranging from 1 to 3½ inches were used. The hoop nets used were 10 feet in length with a throat diameter of 4 feet and having a mesh of 2 inches. Bag seines were used to supplement the netting with seining collections.

The criteria for consideration of control work would be a rough fish population exceeding 80 per cent by weight or number of the total fish collections for given waters.

CADDO LAKE

Caddo Lake, located on the Texas-Louisiana line and lying in Marion and Harrison counties, was surveyed in 1953-55, 1961-62, 1962-63, 1964 and 1966. Table 1 contains the netting results for this segment and also compares the per cents by number of rough and game fish with those of previous segments. The rough and game fish has remained relatively constant throughout the sampling period, and the lake has remained a favorite fishing area for many sportsmen.

Table 1

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Gizzard shad	12	21.06	9.25	16.21
Chain pickerel	5	8.77	5.88	10.30
Spotted sucker	1	1.75	2.00	3.50
Channel catfish	1	1.75	3.00	5.26
Black bullhead	8	14.04	13.00	22.78
Yellow bullhead	13	22.82	13.31	23.32
Largemouth bass	2	3.51	2.63	4.61
Warmouth	3	5.26	1.63	2.86
Spotted sunfish	1	1.75	.13	.22
Redear sunfish	6	10.53	1.25	2.19
Bluegill sunfish	1	1.75	.50	.87
Black crappie	3	5.26	2.50	4.38
Drum	1	1.75	2.00	3.50

Totals	57	100.00	57.08	100.00
Rough fish	40	70.18	45.44	79.61
Game fish	17	29.82	11.64	20.39

Comparison of per cent of numbers for this segment with reconnaissance data from previous segments.

	1953-55	1961-62	1962-63	1964	1966
Rough fish	74.08	69.57	68.49	72.85	70.18
Game fish	25.92	30.43	31.51	27.15	29.82

LAKE O' THE PINES

Lake O' the Pines is located in Marion county west of Jefferson. This reservoir was surveyed in 1958-59, 1960-61, 1963, 1964 and 1966. Table 2 shows the netting results for 1966 and compares the per cent of rough and game fish with those of previous segments. Lake O' the Pines produces an excellent fishery for largemouth bass and crappie.

LAKE MURVAUL

Lake Murvaul, located in Panola county near Carthage, has been surveyed every year since 1960, with the exception of 1965. Table 3 contains the netting data for 1966 and compares this segment's results with those of previous segments. This reservoir has a very high population of redear and bluegill sunfish. These two species made up 29.50 per cent of the total sample during 1966. Lake Murvaul has become famous as a producer of large bass. Many are taken each year weighing from 6 to 10 pounds.

Table 2

Survey Results of Lake O' the Pines November 1966

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	3	4.00	4.25	5.19
Gizzard shad	11	14.67	8.31	10.14
Chain pickerel	11	14.67	15.19	18.53
Golden shiner	1	1.33	.19	.23
Channel catfish	1	1.33	1.50	1.83
Black bullhead	10	13.33	17.25	21.05
Yellow bullhead	3	4.00	1.63	1.99
White bass	1	1.33	.88	1.07
Largemouth bass	9	12.00	12.69	15.48
Warmouth	1	1.33	.25	.31
Spotted sunfish	1	1.33	.19	.23
Redear sunfish	3	4.00	.88	1.07
Bluegill sunfish	2	2.68	.75	.92
Black crappie	18	24.00	18.00	21.96

Totals	75	100.00	81.96	100.00
Rough fish	39	52.00	46.82	57.13
Game fish	36	48.00	35.14	42.87

Comparison of per cent of numbers for this segment with reconnaissance data from previous segments.

	1958-59	1960	1961	1962	1963	1964	1966
Rough fish	63.79	66.51	67.05	63.33	64.42	32.37	52.00
Game fish	36.21	33.49	32.95	36.67	35.58	67.63	48.00

LAKE STRIKER

Lake Striker, located in Rusk and Cherokee counties has been surveyed every year since 1957 with the exception of 1965. Table 4 contains the netting data for this segment and compares this data with that of previous segments. Lake Striker has a good population of redear and bluegill sunfish. Flathead catfish have increased in the lake, with 10 being taken during this segment. Carp and gizzard shad made up 58.39 per cent of the total weight of the fish collected during this segment. It is recommended that selective netting of carp and gizzard shad be made on Lake Striker.

Table 3

Survey Results Of Lake Murvaul April 1966

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Bowfin	13	6.50	96.89	49.59
Gizzard shad	16	8.00	5.87	3.01
Spotted sucker	1	.50	2.75	1.41
Lake chubsucker	26	13.00	13.12	6.71
Golden shiner	14	7.00	2.62	1.34
Black bullhead	6	3.00	7.75	3.97
Yellow bullhead	25	12.50	11.63	5.95
Largemouth bass	6	3.00	5.00	2.56
Warmouth	13	6.50	3.25	1.66
Redear sunfish	29	14.50	8.13	4.16
Bluegill sunfish	30	15.00	5.87	3.01
White crappie	20	10.00	31.76	16.25
Black crappie	1	.50	.75	.38

Totals	200	100.00	195.39	100.00
Rough fish	101	50.50	140.63	71.98
Game fish	99	49.50	54.76	28.02

Comparison of per cent of numbers for this segment with reconnaissance from previous segments.

	1960	1961	1962	1963	1964	1966
Rough fish	68.00	57.49	68.94	54.37	66.12	50.50
Game fish	32.00	47.51	31.06	45.63	33.88	49.50

LAKE PALESTINE

Lake Palestine, located in Henderson, Cherokee, Smith and Rusk counties has been surveyed every year since 1962, with the exception of 1965. Table 5 contains the netting data for this segment and compares this data with that of previous segments. The unusually high percentage of game fish netted this segment is due primarily to the large number of bluegill and redear sunfish taken. These two species comprised 42.81 per cent of the total sample. The percentage of rough fish by weight was 69.30 per cent as contained in Table 5.

Table 4

Survey Results of Lake Striker May 1966

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	2	.85	3.50	1.33
Gizzard shad	140	59.83	66.88	25.35
River carpsucker	1	.43	.56	.21
Carp	18	7.69	139.94	53.04
Channel catfish	2	.85	2.88	1.09
Black bullhead	1	.43	.37	.14
Flathead catfish	10	4.27	33.00	12.51
White bass	1	.43	.88	.33
Spotted bass	2	.85	1.13	.43
Largemouth bass	4	1.71	2.37	.90
Redear sunfish	33	14.10	7.81	2.96
Bluegill sunfish	11	4.70	2.44	.92
Redbreast sunfish	5	2.14	.50	.19
White crappie	2	.86	.56	.21
Black crappie	2	.86	1.00	.39

Totals	234	100.00	263.82	100.00
Rough fish	162	69.23	211.25	80.07
Game fish	72	30.77	52.57	19.93

Comparison of per cent of numbers for this segment with reconnaissance from previous segments.

	1957-58	1958-59	1959-60	1961	1962	1964	1966
Rough fish	74.89	73.66	71.72	70.19	80.93	35.72	69.23
Game fish	25.11	26.34	28.28	29.81	19.07	64.28	30.77

DAM "B" RESERVOIR

Dam "B" Reservoir, located in Jasper and Tyler counties on the Angelina and Neches Rivers, has been surveyed in 1958-59, 1961-62, 1963, 1964 and 1966. Table 6 contains this segment's netting data and compares this data with that of previous segments. Dam "B" Reservoir continues to be a very productive reservoir, due to its shallow depth and water fluctuation. Dam "B" Reservoir is one of the best catfish producing lakes in Region 3-B, as shown in Table 6.

Table 5

Survey Results Of Lake Palestine July 1966

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	8	2.68	23.50	13.49
Gizzard shad	39	13.04	17.25	9.90
Carp	2	.67	8.62	4.95
Spotted sucker	22	7.36	18.50	10.62
Lake chubsucker	1	.33	.69	.39
Black bullhead	18	6.02	30.06	17.25
Yellow bullhead	24	8.03	22.13	12.70
Largemouth bass	2	.67	2.06	1.18
Warmouth	17	5.69	5.25	3.01
Spotted sunfish	1	.33	.50	.29
Redear sunfish	31	10.37	7.44	4.27
Bluegill sunfish	97	32.44	21.25	12.20
Redbreast sunfish	3	1.00	.50	.29
Black crappie	34	11.37	16.50	9.46

Totals	299	100.00	174.25	100.00

Rough fish	114	38.13	120.75	69.30
Game fish	185	61.87	53.50	30.70

Comparison of per cent of numbers for this segment with reconnaissance from previous segments.

	1962	1963	1964	1966
Rough fish	73.37	84.67	87.70	38.13
Game fish	26.63	15.33	12.30	61.87

SABINE RIVER

Approximately 15 miles of the Sabine River was surveyed in lower Newton county during this segment. Table 7 gives the netting results of this survey. While this portion of the Sabine River meets the 80 per cent rough fish criteria for population control, such management is not recommended. Stream management by chemical controls is not economically feasible and rough fish population control by commercial fishing is not probable because of the low value of the noncommercial rough fish species present. River carpsucker (Carpionodes carpio) and gars (Lepisosteus sp.) comprised 58.14 per cent of the total number of fish taken.

Table 6

Survey Results Of Dam "B" Reservoir February 1966

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	27	14.06	48.31	21.23
Gizzard shad	55	28.65	36.94	16.23
Smallmouth buffalo	4	2.08	21.13	9.28
River carpsucker	4	2.08	8.25	3.62
Spotted sucker	2	1.04	1.32	.58
Lake chubsucker	1	.52	.25	.11
Carp	1	.53	3.00	1.32
Channel catfish	22	11.46	7.41	3.26
Blue catfish	17	8.85	44.40	19.51
Black bullhead	1	.53	.19	.08
Spotted bass	1	.52	.56	.25
Largemouth bass	14	7.29	16.63	7.30
Redear sunfish	5	2.60	.94	.41
Bluegill sunfish	2	1.04	.56	.25
White crappie	17	8.85	21.56	9.47
Black crappie	9	4.69	7.57	3.33
Drum	10	5.21	8.57	3.77

Totals	192	100.00	227.59	100.00
Rough fish	105	54.69	127.96	56.22
Game fish	87	45.31	99.63	43.78

Comparison of per cent of numbers for this segment with reconnaissance from previous segments.

	1958-59	1961	1962	1963	1964	1966
Rough fish	62.37	64.21	64.99	72.59	59.93	54.69
Game fish	37.63	35.79	35.01	27.41	40.07	45.31

NECHES RIVER

Three surveys were made on the Neches River this segment. The first survey was made in Tyler county near the confluence of the Neches and Trinity Rivers. Table 8 contains the results of that survey. The second survey was made near Highway 59, south of Diboll, in Polk and Angelina counties. Table 9 contains the results of that survey. The third survey was made near Highway 21, south of Alto, in Cherokee and Houston counties. Six gill nets were set overnight and only one smallmouth buffalo, weighing one pound, was collected.

Table 7

Survey Results Of The Sabine River 1966
Lower Newton County

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	3	6.98	2.75	5.03
Longnose gar	4	9.30	11.93	21.82
Gizzard shad	1	2.33	1.37	2.51
Blue sucker	1	2.33	2.75	5.03
Smallmouth buffalo	3	6.98	14.25	26.06
River carpsucker	18	41.86	11.63	21.27
Spotted sucker	2	4.65	2.37	4.33
Striped mullet	1	2.33	.75	1.37
Spotted bass	5	11.63	3.37	6.16
Bluegill sunfish	1	2.32	.13	.23
White crappie	1	2.32	.13	.24
Black crappie	1	2.32	.19	.35
Drum	2	4.65	3.06	5.60

Totals	43	100.00	54.68	100.00
Rough fish	35	81.40	47.80	87.42
Game fish	8	18.60	6.88	12.58

Table 8

Survey Results Of The Neches River 1966 Tyler County

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	6	6.52	8.63	6.77
Longnose gar	2	2.18	3.37	2.64
Gizzard shad	8	8.69	4.00	3.13
Smallmouth buffalo	26	28.27	64.88	50.85
River carpsucker	6	6.52	9.63	7.55
Channel catfish	1	1.09	1.37	1.08
Blue catfish	4	4.36	5.75	4.50
Flathead catfish	3	3.26	12.19	9.55
Bluegill sunfish	7	7.60	.50	.40
White crappie	16	17.39	7.13	5.59
Black crappie	6	6.52	2.50	1.96
Drum	7	7.60	7.63	5.98

Totals	92	100.00	127.58	100.00
Rough fish	55	59.78	98.47	76.92
Game fish	37	40.22	29.11	23.08

Table 9

Survey Results Of The Neches River 1966
Highway 59 South Of Diboll

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	4	12.90	14.00	20.73
Longnose gar	8	25.81	23.75	35.17
Gizzard shad	2	6.45	.75	1.12
Smallmouth buffalo	4	12.90	12.50	18.51
Spotted sucker	1	3.23	1.88	2.78
Flathead catfish	4	12.90	6.63	9.82
White crappie	3	9.68	.88	1.31
Drum	5	16.13	7.13	10.56

Totals	31	100.00	67.52	100.00
Rough fish	24	77.42	60.01	88.88
Game fish	7	22.58	7.51	11.12

Seining collections included: Gambusia, Blackstripe topminnow, Redhorse shiner, Spottail shiner, Arkansas sand darter, and spotted bass.

TRINITY RIVER

The Trinity River was surveyed in Trinity county on June 28, 1966. At the time of the survey the river was very high, making the use of gill nets impossible. Seven hoop nets were set overnight, with one carp and one channel catfish being taken. Table 10 contains this netting data.

Table 10

Survey Results Of The Trinity River 1966

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Carp	1	50.00	2.00	72.73
Channel catfish	1	50.00	.75	27.27

Totals	2	100.00	2.75	100.00
Rough fish	1	50.00		
Game fish	1	50.00		

ANGELINA RIVER

Approximately 5 miles of the Angelina River was surveyed in Jasper county, near its confluence with the Neches River. Table 11 gives the results of that survey. Rough fish comprised 88.89 per cent of the weight of the total sample. At the present time there are several contract fishermen fishing in Dam "B" Reservoir, which lies just below the confluence of the Angelina and Neches Rivers. Therefore, no other rough fish population control management on the Angelina River is recommended at this time.

Table 11
Survey Results Of The Angelina River, July 1966,
Jasper County

<u>Species</u>	<u>Number</u>	<u>Per Cent No.</u>	<u>Weight</u>	<u>Per Cent Wt.</u>
Spotted gar	10	16.39	39.50	35.78
Longnose gar	3	4.92	9.00	8.15
Bowfin	1	1.64	4.00	3.62
Gizzard shad	10	16.39	4.13	3.74
Smallmouth buffalo	15	24.59	34.25	31.03
River carpsucker	1	1.64	1.25	1.13
Carp	2	3.28	4.50	4.08
Channel catfish	8	13.11	6.50	5.89
Blue catfish	1	1.64	1.50	1.36
Bluegill sunfish	3	4.92	.63	.57
Yellowbreasted sunfish	1	1.64	.13	.12
White crappie	3	4.92	2.50	2.26
Black crappie	1	1.64	1.00	.91
Drum	2	3.28	1.50	1.36

Totals	61	100.00	110.39	100.00
Rough fish	44	72.13	98.13	88.89
Game fish	17	27.87	12.26	11.11

Conclusions and Recommendations:

During this segment lakes Caddo, Lake O' the Pines, Murvaul, Striker, Palestine, Dam "B" Reservoir and portions of the Sabine, Neches, Trinity and Angelina Rivers were surveyed to determine present fish populations and also to determine those waters which would benefit from population control.

Criteria for rough fish population control in this study was 80 per cent rough fish by weight or number of the total fish collection for each water. Of the lakes surveyed during this segment only Lake Striker met this criteria. Lake Striker had 80.07 per cent rough fish by weight. Carp and gizzard shad made up 58.39 per cent of the total weight. It is recommended that selective netting of carp and gizzard shad be made on Lake Striker.

The Sabine River meets the 80 per cent rough fish criteria for population control, but such management is not recommended. Stream management by chemical controls is not economically feasible and control by commercial fishing is not probable because of the low value of the non-commercial rough fish species present. River carpsucker (Carpionodes carpio) and gar (Lepisosteus sp.) comprised 58.14 per cent of the total number of fish taken. Data compiled from those portions of the Neches and Angelina Rivers studied during this segment show that these rivers also meet the criteria for rough fish population control. Chemical control of rough fish populations in rivers is not economically feasible and commercial fishing is not probable. Although the smallmouth buffalo (Ictiobus bubalus) made up 39.62 per cent of the total weight of fish taken from the Neches River and 31.03 per cent of the total weight of the fish taken from the Angelina River, these fish were too small to be of good commercial value. Therefore, no control recommendations are made for these rivers.

The collection data from the Trinity River survey was invalid due to flooded conditions of the river. Additional collections were not made due to other project activities. In view of these limited data, no conclusions can be made for this stream.

With the exception of Lake Striker, none of the lakes in Region 3-B meet the criteria for rough fish population control recommendations. Allotted time for river surveys was not sufficient to properly determine fish population criteria. Therefore, no conclusions can be related directly to stream field data. It is further realized that neither chemical or mechanical means of rough fish control is applicable in area rivers concerned. It is therefore recommended that this job be terminated.

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Date April 17, 1967

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